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## STUDENT REPORT

FORECAST DEMAND FOR PILOTS BY THE  
AIRLINE INDUSTRY

MAJOR GEORGE C. MAZZEO

84-170

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**TITLE** FORECAST DEMAND FOR PILOTS BY THE AIRLINE INDUSTRY

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Submitted to the faculty in partial fulfillment of  
requirements for graduation.

AIR COMMAND AND STAFF COLLEGE  
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## PREFACE

The demand for new hire pilots by the airline industry has traditionally impacted on USAF pilot retention. In order to more accurately forecast USAF pilot attrition, it is necessary to have a realistic estimate of the demand in the private sector. The goal of this project was to determine that demand estimate through an analysis of airline traffic growth forecasts, airline fleet composition and predicted airline pilot attrition. The author wishes to acknowledge the assistance of Major Mark Warner, ACSC/EDOWC, his faculty advisor for this project. His encouragement and assistance greatly facilitated the completion of this study.

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Major Mazzeo is a senior pilot with thirteen years of operational experience in the KC-135, including two tours of duty with the KC-135 Combat Crew Training School at Castle AFB, CA. Additionally, he has served eighteen months in the Air National Guard and has been an advisor to the USAF Reserve. Major Mazzeo is a reserve recall pilot who spent one year with a major airline prior to returning to active duty. He is a 1969 graduate of the New Jersey Institute of Technology with a B.S. in Mechanical Engineering and a 1971 graduate of the University of Southern California with a M.S. in Systems Management. He is a Distinguished Graduate of AFROTC and Squadron Officer School and is presently attending Air Command and Staff College in residence.

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## EXECUTIVE SUMMARY

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### REPORT NUMBER

84-1700

### AUTHOR(S)

MAJOR GEORGE C. MAZZEO, USAF

### TITLE

FORECAST DEMAND FOR PILOTS BY THE AIRLINE INDUSTRY

- I. Purpose: To determine the demand for new hire pilots by the airline industry through 1993.
- II. Problem: The hiring practices of the airline industry have historically had a significant correlation to USAF pilot retention and attrition. The large scale hiring during the late 1970s had a tremendous impact on pilot manning levels throughout the Air Force. To insure adequate pilot manning through the next decade, the Air Force must know the extent to which the airline industry will be hiring during that period. The demand for new hire pilots is a function of airline traffic growth, cockpit configuration (two or three-pilot) and attrition in the currently employed pilot group. To determine the total demand for new hires, these three factors must be analyzed along with several collateral issues that affect the total airline pilot population.
- III. Data: It is possible to determine the airline population required to meet industry demand through 1993 by two independent methods. The first method determines pilot-to-seat ratios based on the known present condition, determines the industry fleet composition based on Department of Transportation (DOT) forecasts, and then extrapolates demand through the forecast period. The second method, used to corroborate the first, also begins with known conditions, current airline pilot population and industry traffic. By comparing known traffic to DOT forecast traffic and correcting for changes in fleet composition, trip lengths and load factors, the forecast pilot demand is established. This secondary analysis yielded results that were

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## CONTINUED

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within 1% of the primary method. Programmed airline pilot attrition data is compiled from industry sources. The total pilot demand combined with programmed attritions yields the requirement for replacement, or new hire, personnel. A discussion of collateral issues affecting airline pilot attrition and furlough recalls is also included.

IV. Conclusion: For the period covering calendar years 1984 through 1993, the airline industry will hire approximately 16,000 pilots, or an average of 1600 pilots per year. The average will be slightly less during the first three years due to furlough recalls and slightly greater in the out years due to more rapid growth and greater attrition.

## Chapter One

### INTRODUCTION

#### Background/Significance

During the period from 1977 to 1979 the USAF experienced severe attrition in the 6 to 11 year pilot group. We are only now recovering from the effects of that mass exodus. In order to avoid future force disruptions, it will be necessary to anticipate and plan for pilot attritions. HQ AFMPC/MPCHO, the sponsoring agency for this report, is involved in the on-going analysis of pilot retention problems. This is an extremely complex issue, involving many variables and well beyond the scope of the project. The purpose of this study is to analyze one of the more significant variables, the expected demand for new hire pilots in the airline industry.

Not all pilot attrition can be attributed to airline hiring, but as the following graphic indicates; there is a substantial correlation (14:1). Furthermore, historical data

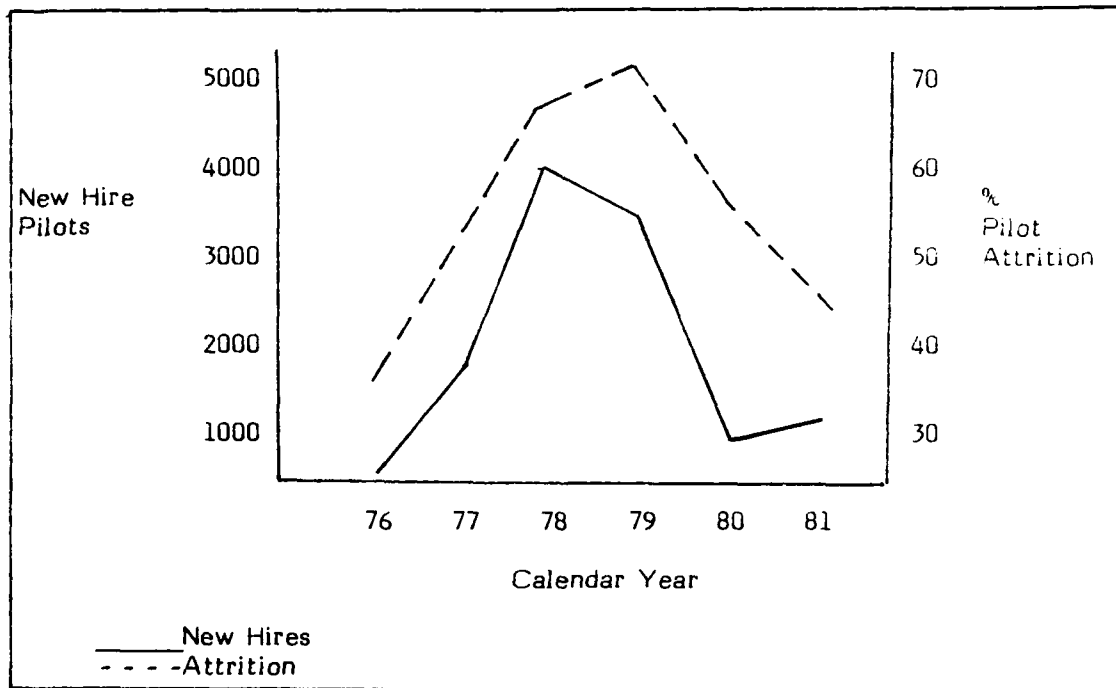


Figure 1

HIRING/ATTRITION CORRELATION

indicates that since 1979 approximately 83% of airline new hires are ex-military pilots and 72% of that group are former Air Force members (4:28). It is therefore essential that MPC force planners have an accurate appraisal of airline pilot requirements, if they hope to forecast Air Force pilot attrition.

### Definitions

For the purpose of this study a new hire is defined as a pilot not presently in the employ of a commercial airline or on a furlough list. A major airline is defined as one of the ten largest commercial carriers accounting for 85.2% of the industry's 1982 passenger capacity (9:20). United, American, Delta, etc. are representative of this group. A national airline is defined as one of the seventeen next largest operators which accounted for 12.8% of the industry's 1982 capacity (9:21). Frontier, Air Florida, Ozark, etc. are representative of this group. The two groups are almost exclusively turbojet operators. A regional airline is any remaining Federal Aviation Regulation (FAR) Part 121 operator. The regionals operate turbojets, turboprops and piston aircraft. They represented approximately 2% of 1982 industry capacity (9:21).

The analysis will make reference to several industry related parameters that must be defined at the outset. An available seat mile (ASM) is defined as one seat available for sale and flown one mile (1:15). For example, a Boeing 727 configured with 120 passenger seats and flown on a one thousand mile trip would generate 120,000 ASMs. A revenue passenger mile (RPM) is the number of seats actually sold for each mile flown (1:14). If the same 727 were flown on the same trip with only 60 paying customers, it would generate 60,000 RPMs. The load factor is the ratio of seats sold to seats available for each flight. In the above example, the load factor is 60/120 or 50%.

### Assumptions

In order to keep the scope of the analysis within reasonable limits, only those carriers classified as majors or nationals are included. It is assumed that their market share, expressed in RPMs, will remain relatively constant. This assumption was necessary due to the volatile nature of the regional carriers and the difficulty associated with obtaining accurate data about them. Since they presently represent only 2% of the total market, this assumption should not compromise the overall validity of the report.

The analysis is based on the assumption that the U.S. Gross National Product (GNP) will grow at an average annual rate of 3.1%, adjusted for inflation, throughout the forecast period. The figure is a consensus of four independent financial analysis firms (9:9). Since there is no accurate way to forecast growth on a yearly basis, the average growth rate will be applied throughout the period. While conceding that deviations in economic growth in specific years could have a profound effect on airline hiring for that specific year, the assumption is made that these fluctuations will average out in the long term and not seriously compromise the study. If the U.S. economy were to enter a major sustained recession, a new analysis would be required. It is important to realize that this is not a stagnation analysis, but rather one based on the scenario of moderate average economic growth.

This analysis assumes that fuel prices will continue to escalate at an average annual rate of from .4% to 3.8% (9:18). Any traumatic price escalation, as in 1979,

would have a significant impact on the industry and would greatly curtail the demand for pilots. The analysis also assumes that there will be sufficient fuel available to meet industry requirements. Rapidly increasing fuel prices would affect the analysis because it would result in reduced operations and increased fares. A decrease or stagnation in fuel pricing would affect the analysis by allowing carriers to delay conversion to the new generation, fuel efficient, two-pilot airliners.

#### Limitations

This study is not intended to forecast airline pilot requirements down to the last man, but rather to give a realistic estimate of the demand through the forecast period with as much accuracy as possible. The study is limited by the accuracy of economic forecasts, internal corporate aircraft purchase decisions and several pending legislative and judicial matters regarding pilot retirement.

#### Objectives

The first objective of this study is to establish the total industry requirement for pilots. This will be accomplished by two independent analytical processes. The first method will use crew-to-aircraft ratios and projected airline fleet composition to determine pilot demand. The second method will provide an analysis of passenger traffic growth and industry capacity to establish the pilot demand. Since both analytical methods yield similar results, the study has its own internal verification.

The second objective is to determine total airline pilot attrition through the forecast period. This will be accomplished by tabulating airline pilot retirement schedules and quantifying attritions for other reasons. The latter will be accomplished by applying historical attrition rates for health, death, resignation, etc. to the present pilot population. The study will also examine the "Age 60" issue which is concerned with mandatory pilot retirements. The intent will be to examine the impact of pending legislative and judicial action on the pilot retirement picture.

The third objective is to determine the composition of the current furlough population of airline pilots. These are former employees who must be recalled by their specific companies prior to any new hiring. This furlough population will be determined by tabulating individual airline furlough lists. The study will also include an analysis of the impact of the Airline Deregulation Act of 1978 and its Employee Protection Provisions (EPPs) on the composition of the furlough pool.

The three objectives above will provide the basis for determining the industry requirement for new hire pilots. The process is relatively simple. The current number of airline pilots is known. From objective one we have determined the future requirements. The difference, once furloughees from objective three have been accounted for, must come from new hires. Additionally the attritions from objective two, not covered by furlough recalls, will also generate a requirement for new hires. Once the demand is established, HQ AFMPC/MPCHO will be able to incorporate that data in their pilot retention models.

## Chapter Two

### TOTAL AIRLINE PILOT POPULATION

#### Data

The first step in the analysis is to establish the total number of airline pilots now active. This number will serve as the baseline for computations throughout the report. Table 1 is a listing of the carriers used in this analysis and their pilot staffing as of May 1983 (3:5-7). These 36,752 active pilots represent all major and national carriers and are responsible for transporting 98% of revenue traffic industry-wide.

The next step is to determine the industry fleet composition. For the purpose of analyzing pilot requirements, it is necessary to divide the airline fleet into two categories, those aircraft with three man crews and those with two man crews. The first category includes the Boeing 707, 727, 747, the Lockheed L-1011, and the McDonnell Douglas DC-8 and DC-10. The second category includes the Boeing 737, 757, 767, the McDonnell-Douglas DC-9 and the Airbus Industry A-300. Table 2 indicates the industry fleet composition by category (3:5-7).

#### Analysis

With the data from the two previous steps we can determine the ratio of pilots required to cockpit seats available. This ratio will be instrumental in forecasting future demand. The ratio is computed by dividing the number of active pilots by the sum of total cockpit seats for each airline.

$$\text{Pilot/Seat Ratio} = \frac{\text{Active Pilots}}{\text{Total Cockpit Seats}} = \frac{\text{Active Pilots}}{2(\text{No. of 2 Pilot ACFT}) + 3(\text{No. of 3 Pilot ACFT})}$$

For Example: Delta Airlines (See Table 2)

$$\text{Pilot/Seat Ratio} = \frac{3999}{2(43)+3(175)} = \frac{3999}{611} = 6.55$$

This number indicates that Delta Airlines employs 6.55 pilots for every cockpit seat in its fleet in order to meet schedule demands. Table 2, Column V, displays this data for the entire industry.

By combining the data in Table 2, it is possible to compute an industry-wide pilot-to-seat ratio. The average is computed by multiplying the ratio for each airline

by the number of active pilots for that company. The results for each carrier are totaled and then divided by the total industry-wide pilot population.

Where:  $P_a$  = active pilots for airline "a"  
 $R_a$  = pilot-to-seat ratio for airline "a"  
 $R_i$  = industry pilot-to-seat ratio

Then:

$$R_i = \frac{\text{Total } P_a R_a + P_b R_b \dots}{\text{Total } P_a + P_b \dots}$$

In synopsis, the process looks like this:

<u>Company</u>	<u>Active Pilots (P)</u>	<u>Pilot/Seat Ratio (R)</u>	<u>PxR</u>
Air Florida	174	4.57	795
Air Cal	209	4.75	993
.	.	.	.
.	.	.	.
.	.	.	.
World	<u>249</u>	6.38	<u>1589</u>

$$\text{Total } P_a + P_b = 36,752$$

$$\text{Total } P_a R_a + P_b R_b = 222,062$$

$$R_i = 222,062 / 36,752 = 6.04$$

We now know, that as of May 1983, the airline industry employed an average of 6.04 pilots per cockpit seat.

Since deregulation, the airline industry has been forced to reduce labor costs in order to compete with new entrant carriers who are largely non-union. This increased emphasis on efficiency has resulted in staff reductions and productivity concessions by all labor groups including pilots (1:36). As a result, it is unlikely that any significant change in  $R_i$  will occur over the forecast period. Therefore, in order to predict the total pilot requirement, we need only determine the number of cockpit seats available through the forecast period and multiply by 6.04.

The DOT, through the Federal Aviation Administration (FAA), issues a ten year forecast of airline fleet composition. The forecast data are displayed graphically in Figure 2 (9:47). The decline in three-man aircraft and increase in two-man aircraft will have a significant effect on total pilot requirements. Roughly 50% of the industry fleet was purchased prior to 1970 (8:17). These aircraft, designed before the 1973 and 1979 oil price shocks, focused on capacity. The reality of today's market dictates

aircraft designed for fuel efficiency (1:34). The fleet transformation to the next generation aircraft is likely during the forecast period, only the exact timing is indeterminate.

### Results

Total pilot requirement, as displayed in Table 3, is computed by multiplying total cockpit seats by the industry-wide pilot-to-seat-ratio. For example, in 1983 the forecast is for 1685 three-man cockpits or 5055 seats and 820 two-man cockpits or 1640 seats for an industry total of 6695 seats. Multiplying this figure by 6.04 yields a total pilot requirement for 1983 of 40,437. Since we know the total pilots required for 1983 to be 36,752, we must explain an apparent 9.1% disparity of 3,685 pilots. This can be accounted for by FAA Part 121 regional carriers. Tabulation of their pilot resources is difficult, but appears to confirm the theory (3:5-7). Since we assume their 2% of the market is not expected to change significantly, we will also assume their 9.1% of the pilot force will remain relatively constant. Table 3 displays the yearly pilot requirement corrected for Part 121 regional carriers.

The data displayed in Figure 2 and Table 3 indicate a significant pilot trend of the decade. While the total number of aircraft will increase 21.9%, the total pilot requirement will increase only 7.6%. The reason is the trend towards two-man cockpits in the new generation aircraft. No attempt is made to forecast the activity of any single airline, but rather the industry as a whole. Therefore, the analysis is independent of mergers, new entrants and failures. In essence, it doesn't matter what name is painted on the side of these aircraft as long as they are operated by someone.

M = MAJOR  
N = NATIONAL

<u>AIRLINE</u>	<u>ACTIVE PILOTS</u>	<u>FURLONGHS</u>
Air Florida (N)	174	122
Air Cal (N)	209	36
Alaska (N)	256	
Aloha (N)	85	
American (M)	4,024	505
Capitol (N)	120	80
Continental (M)	1,580	467
Delta (M)	3,999	
Eastern (M)	4,400	
Flying Tiger (N)	704	177
Frontier (N)	581	54
Hawaiian (N)	85	68
Northwest (M)	1,671	
Ozark (N)	438	76
PSA (N)	483	30
Pan Am (M)	2,879	541
Peoples Express (N)	387	
Piedmont (N)	916	
Republic (N)	1,900	
Southwest (N)	377	
Transamerica (N)	371	146
TWA (M)	2,899	683
United (M)	4,953	761
US Air (M)	1,441	
Western (M)	1,442	
Wien (N)	129	50
World (N)	249	
	<u>36,752</u>	<u>3,796</u>

Source: (3:5-7)

TABLE 1  
AIRLINE PILOT POPULATION  
(As of May 1983)

I CARRIER	II ACTIVE PILOTS	III 2-MAN ACFT	IV 3-MAN ACFT	V PILOT/SEAT RATIO
Air Florida	174	13	4	4.57
Air Cal	209	22	0	4.75
Alaska	256	3	13	5.69
Aloha	85	7	0	6.07
American	4,024	3	230	5.78
Capitol	120	0	9	4.44
Continental	1,580	41	71	5.35
Delta	3,999	43	175	6.55
Eastern	4,400	114	148	6.54
Flying Tiger	704	0	38	6.18
Frontier	581	60	0	4.83
Hawaiian	85	7	0	6.07
Northwest	1,671	0	113	4.92
Ozark	438	45	0	5.96
PSA	483	27	9	5.96
Pan Am	2,879	0	131	7.32
Peoples Express	387	22	1	8.23
Piedmont	916	59	15	5.61
Republic	1,900	149	15	5.53
Southwest	377	39	0	4.83
Transamerica	371	0	32	3.86
TWA	2,899	5	151	6.26
United	4,953	67	250	5.60
US Air	1,441	104	16	5.62
Western	1,442	14	58	7.13
Wien	129	12	0	5.38
World	249	0	13	6.38

Source (3:5-7)

TABLE 2  
PILOT/SEAT RATIOS

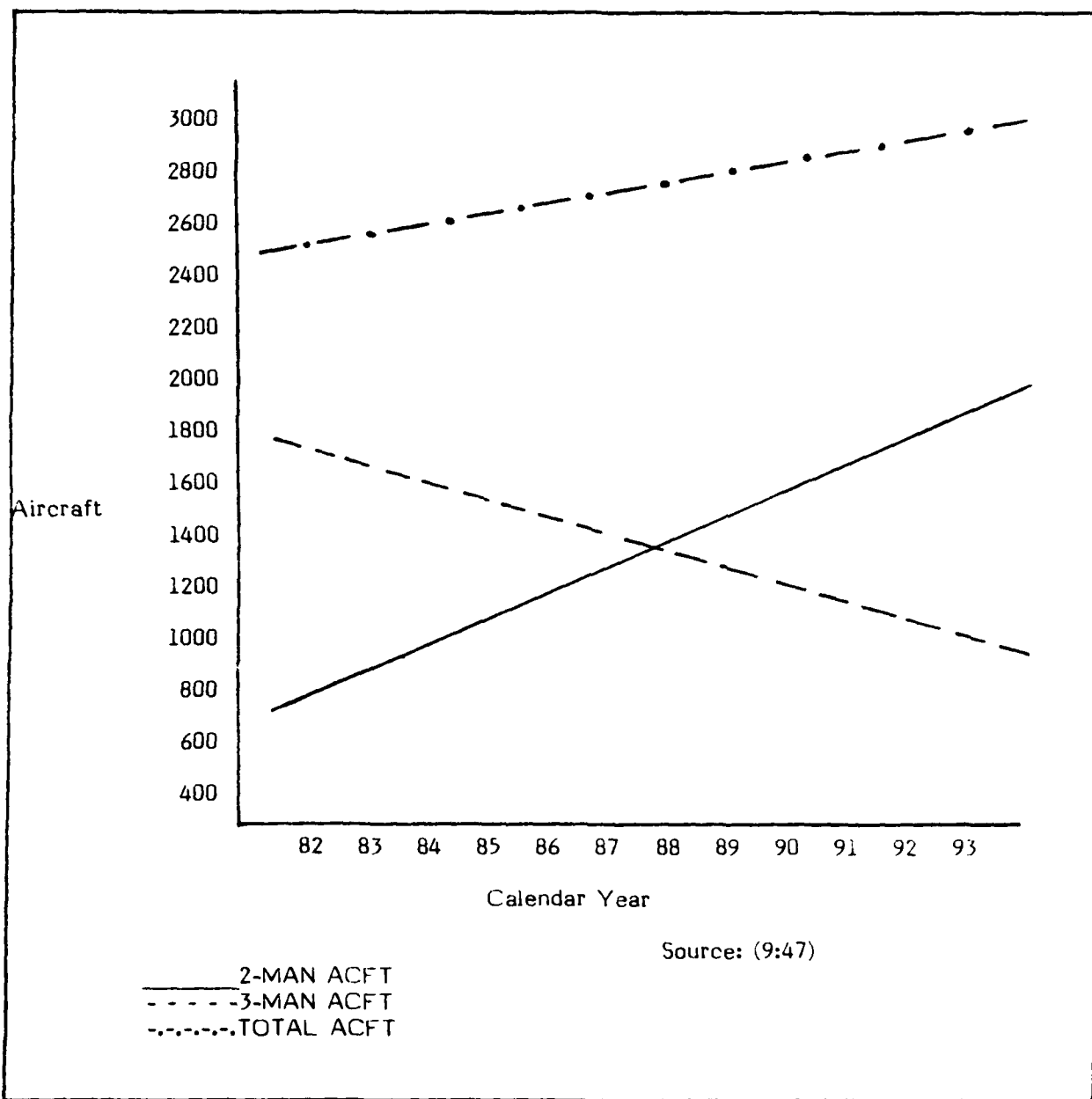


FIGURE 2  
FLEET COMPOSITION

YEAR	PILOTS				TOTAL SEATS	PILOTS (X6.04)	CORRECTED (-9.1%)
	3-MAN ACFT	3-MAN SEATS	2-MAN ACFT	2-MAN SEATS			
1983	1685	5055	820	1640	6695	40437	36752
1984	1629	4887	908	1816	6703	40486	36802
1985	1541	4623	957	1914	6537	39483	35890
1986	1435	4305	1089	2178	6483	39157	35594
1987	1340	4020	1217	2434	6454	38982	35434
1988	1270	3810	1342	2684	6494	39223	35654
1989	1228	3684	1468	2936	6620	39985	36346
1990	1197	3591	1586	3172	6763	40848	37131
1991	1164	3492	1702	3404	6896	41652	37861
1992	1131	3393	1830	3660	7053	42600	38723
1993	1098	3294	1955	3910	7204	43512	39552

TABLE 3  
FORECAST AIRLINE PILOT POPULATION

## Chapter Three

### AN ALTERNATE FORECAST METHOD

#### Data/Analysis

To corroborate the findings of the previous chapter, an alternate analytical method will be used to forecast total pilot demand. This process involves an examination of the current passenger traffic and the forecast growth. Figure 3 depicts the data, both historical and forecast, for revenue passenger miles (RPMs). You will recall from Chapter I that RPMs are a measure of paying customers.

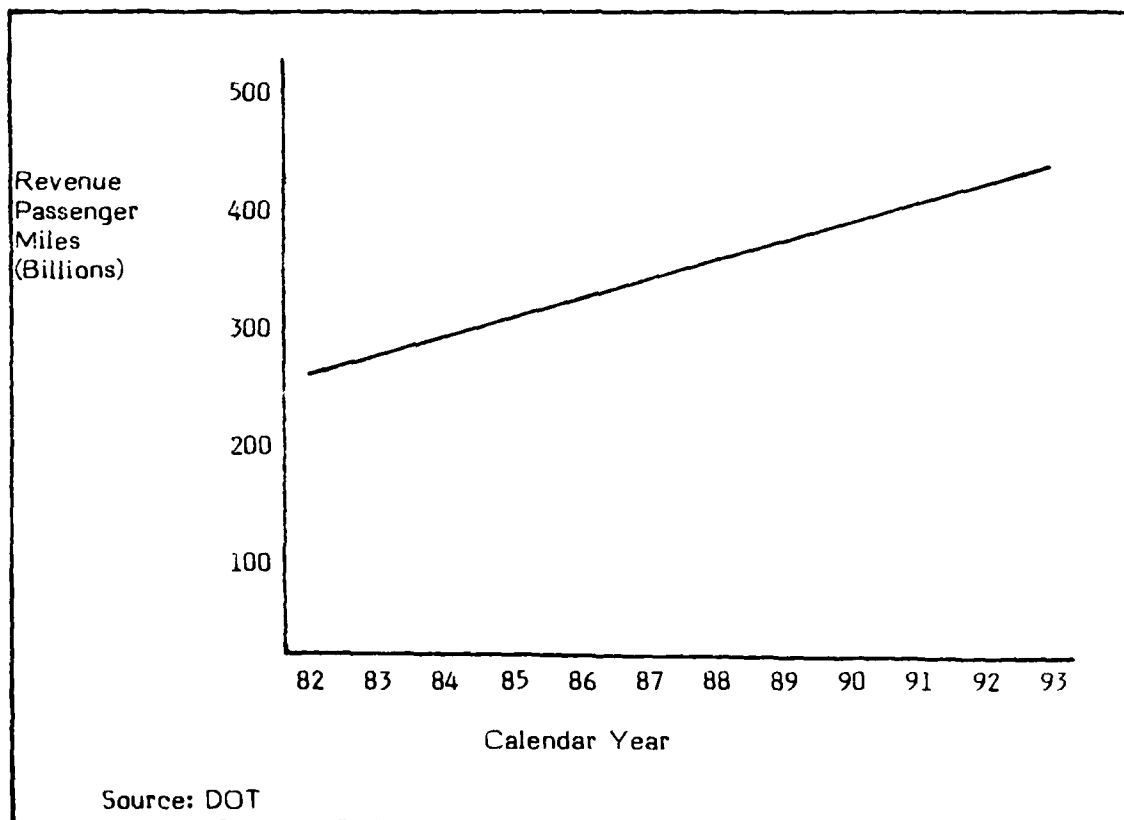


FIGURE 3  
FORECAST TRAFFIC GROWTH

In the interest of brevity, an annual accounting will not be made using the secondary method. Instead, validation will be accomplished by comparing 1992 results for both processes. The theory is to establish a ratio between the number of passengers transported and the pilots required to transport them. To do this, we must start with known data (1982) and compare it to forecast data (1992). The entire process is depicted in Table 4. The first entries are annual industry RPMs reduced 2% for regional carriers.

The average trip length in 1982 was 762 miles and is forecast to grow to 792 miles in 1992 (9:23). Dividing annual RPMs by average trip length yields average annual revenue passengers (RPs). Dividing by 365 yields the average daily RP figures. After establishing the daily passenger traffic, it is necessary to determine the average number of aircraft required to transport them. This is accomplished by analyzing average seating capacity and load factors.

The trend in aircraft manufacturing is towards larger capacity aircraft. In fact the average seats-per-aircraft figure increases approximately 3 to 4 seats each year (2:43). The average 1982 capacity of 150 seats is expected to grow to 186 seats by 1992 (9:24). Unfortunately for the industry, not all these seats are filled with RPs. The ratio of RPs to available seats is the load factor. The 1982 average load factor of .590 is expected to increase to .632 by the end of the forecast period (9:25). Multiplying the capacity by the load factor results in the average RPs per aircraft.

Having established the average number of passengers who travel each day, it is possible to determine the average number of daily flights required to transport them. This is accomplished by dividing daily RPs by the average RPs per aircraft. The process is valid to this point, since the 1982 daily flights required figure is consistent with actual reported activity for the period (9:22).

If the airline industry employs 36,752 pilots to meet a daily schedule of 10,225 flights in 1982, then how many pilots will be required in 1992 to meet a schedule of 12,066 flights per day? The answer is obtained via a simple ratio:

$$\frac{\text{Daily Flights (1982)}}{\text{Pilots Required (1982)}} = \frac{\text{Daily Flights (1992)}}{\text{Pilots Required (1992)}}$$

or:

$$\frac{10,225}{36,752} = \frac{12,066}{\text{Pilots Required (1992)}}$$

$$\text{Pilots Required (1992)} = 43,369$$

This figure would only be accurate if there were no change in airline fleet composition. Since we have already established that the emphasis will shift from three to two-man cockpits, the above figure must be corrected.

To establish the industry average for cockpit seats per aircraft use the following formula:

$$\frac{3 \times (\text{Total 3-man cockpits}) + 2 \times (\text{Total 2-man cockpits})}{\text{Total cockpits}}$$

Using the data from Figure 2, we can determine the fleet average for the years in question. For 1982 the average is 2.69 pilots per aircraft and for 1992 the average is 2.38.

Finally, to determine the corrected figure for pilots required in 1992 apply the following formula:

$$\frac{\text{AVG Pilot Seats Per ACFT (1992)}}{\text{AVG Pilot Seats Per ACFT (1982)}} \times \text{Pilots Required 1992 (uncorrected)} = \text{Pilots Required 1992 (corrected)}$$

$$\text{Or: } \frac{2.38 (43,369)}{2.69} = 38,371 \text{ Pilots Required 1992 (corrected)}$$

### Results

As in the first method, the analysis is independent of the fate of any single airline. It is based solely on the industry-wide requirement to satisfy passenger traffic demands. The result, 38,371 pilots, is only 1% different from the 38,723 pilots derived from the primary analysis in Chapter Two. Since these two independent methods yield such similar results, we have a high degree of confidence in the accuracy of the process.

<u>1982</u>		<u>1992</u>
251,700,000,000	*RPMS (Reduced 2%)	410,200,000,000
762	*Avg Trip Miles	792
330,300,000	*Annual RPs	517,900,000
904,900	Daily RPs	1,419,000
150	*Avg Seats per ACFT	186
.590	*Avg Load Factor	.632
88.5	Avg RPs per ACFT	117.6
10,225	Avg Flts/Day	12,066
36,752	Pilots Required (Uncorrected)	43,369
2.69	Avg Pilot Seats per ACFT	2.38
	Pilots Required (Corrected for Average Pilot Seats per ACFT)	38,371
* Source DOT		

TABLE 4  
ANALYSIS OF PILOT REQUIREMENTS (1992)

## Chapter Four

### AIRLINE PILOT ATTRITION

#### Programmed Attrition

Before we can determine the requirement for new hire pilots, we must determine the number of currently active pilots who will be departing the airline industry. The primary reason for attrition is through retirement (4:29). As a general rule, this occurs at age 60, but there are pending legislative and judicial actions which could have an impact on the retirement age. Other reasons for attrition include death, failure to meet FAA Class I medical requirements and dismissal.

The retirement schedule for the airline industry is displayed by the solid line in Figure 4. The broken line represents total attrition and is determined by applying the historical non-retirement attrition ratio of 2:1 to the published retirement schedule. In other words, for every two pilots who retire each year an additional one will leave for other reasons (4:29). These totals are displayed in a cumulative format to illustrate the magnitude of replacement personnel required. The relative rate of attrition is the slope of line. For the period from 1983 to 1993 the attrition total is approximately 13,000 pilots or an average of approximately 1,300 per year.

#### Collateral Issues

Obviously, any change in current retirement practices would have an effect on these figures. Specifically, an extension in the mandatory retirement age would delay the requirement for replacement personnel. Presently, the focal point of retirement reform is congressional bill HR 3948. The 1979 legislation would dictate that the FAA amend the Federal Aviation Regulation Part 121 to authorize pilots to fly through age 61-1/2. The bill was reported out of committee with the recommendation that the National Institute of Health (NIH) investigate the safety implications of the proposal (10:3). Two years later, the NIH not only recommended continuation of the age 60 limitation, but also its extension to cover flight engineers (6:3). In spite of that setback, portions of the bill remain alive in congress.

The age 60 rule is also being attacked on the judicial front. To date, the courts have refused to interfere with the FAA's authority to determine air safety rules. The U.S. Court of Appeals in December of 1978, in the case of Starr vs the FAA ruled: "The Age 60 rule is reasonable. The court defers to the discretion allowed the FAA by Congress to determine the type and scope of air safety rules" (11:3). Additionally, U.S. District Courts in the 2nd, 7th and 10th circuits have upheld the age 60 rule (11:3). This suggests that any change to the system will most likely come through legislation as opposed to through the courts.

At this time, it is impossible to predict when and if the status quo will change. What would be the most likely outcome if the age limit were to be extended? Initially, there would be a reduction in the requirement for replacement personnel, but after a

time period equal to the amount of the extension, the process would stabilize. For example, if the age limit were extended from 60 to 61-1/2, there would be a period of 1-1/2 years where the replacement requirement would be reduced. At the end of that period a normal attrition pattern would emerge. The net effect would be a partial shift of the data in Figure 4 to the right.

A secondary retirement issue is the practice of age 60 pilots bidding down to second officer (flight engineer). The second officer, under Part 121, may continue to fly until age 70. By extending their careers, these individuals delay the requirement for replacement personnel. When this practice first started in the late 70's, it appeared that it would assume a much larger scope than it has. For example, at TWA from 1 January 83 through 1 July 83 of 39 pilots eligible for age 60 retirement or bid down, all selected retirement (12:-). It does not appear that the bid down phenomenon will have a significant impact on attrition.

The analysis of scheduled attrition concludes that the airlines will need to replace an average of 1300 pilots annually to continue to operate at current levels. The figures in Chapters 2 and 3 indicate that pilot demand levels will rise as a result of increased operations, despite the trend towards two-man cockpits. To determine the requirement for new hire pilots, the results of the demand and attrition studies must be integrated. One final question must be answered first: What effect will the large number of furloughed pilots have on future hiring?

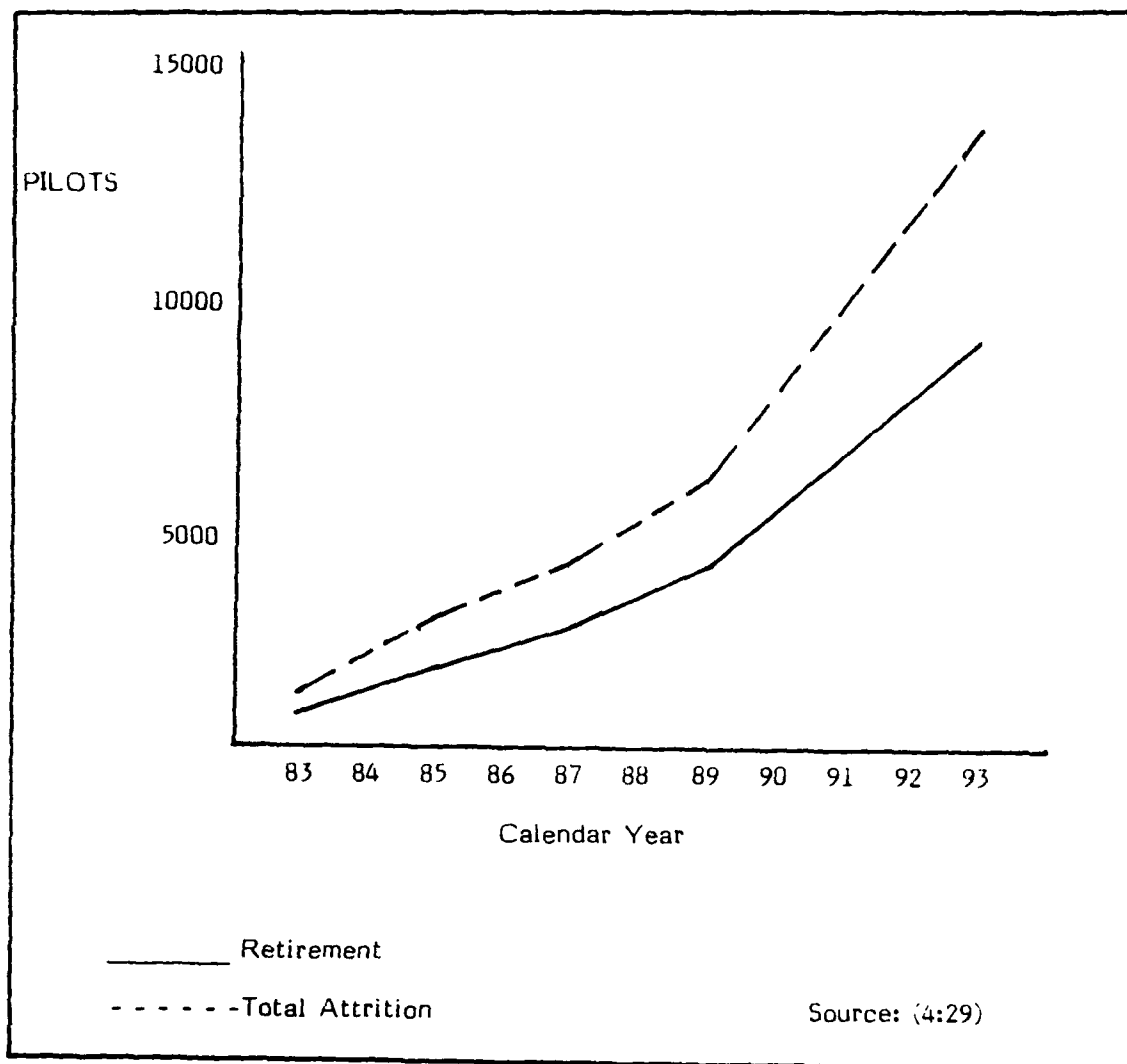


FIGURE 4  
AIRLINE PILOT ATTRITION

## Chapter Five

### THE FURLOUGH POOL

#### Data

The airline pilot population figures contained in Table 1 were based on May 1983 data. At that time, the furlough pool stood at approximately 3,796 pilots. The lion's share of those furloughees belonged to American (505), Continental (467), Pan Am (541), TWA (683) and United (761) (3:5-7). By contractual agreement all furloughed pilots must be recalled by their respective employers prior to any new hiring. The duration of this obligation varies from company to company based on their specific contracts.

#### Analysis

On the surface, it would appear that the recall of these pilots would significantly delay any demand for new hires. In fact, this is not the case. Although American and United have begun recalls, the other major furlough companies have not recalled any pilots in the recent past nor do they plan any recalls in the near future (5:12). Their manning levels are relatively stagnant. The system capacity that their furloughees represent is being replaced by expansion in the more vital companies (e.g. U.S. Air, Northwest, Piedmont) and by new entrants (e.g. New York Air, People Express), all of whom hired significantly in 1983 (5:1-2). This reinforces the industry-wide as opposed to airline-specific nature of the study. That is to say, the industry will grow to meet traffic demands independent of the fate of any single carrier.

Furlough/recall cycles in the airline industry are notoriously unpredictable. Undoubtedly, many of the facts presented here will have changed significantly by the time of publication. The objective is to develop a broad perspective concerning the composition of the furlough pool. Specifically, are all the pilots on those lists actual candidates for recall? There are two circumstances where they would not be, if they have found employment with another carrier or if they intend to decline their recall.

The Airline Deregulation Act of 1978 included an Employee Protection Provision (EPP) designed to assist those pilots who lost their jobs due to industry deregulation. The EPP proposed that any pilot who had accumulated four years of seniority prior to enactment of the law would have "first-right-of-hire" with any company existing at the time of enactment (7:11). This meant that any pilot hired on or before October 24, 1974 and subsequently furloughed was entitled to the first position to become available with any carrier certificated prior to October 24, 1978. The exact details of the program were to be determined by the Department of Labor (DOL) and submitted for congressional approval. After a five year delay, DOL submitted their EPPs to Congress in November 1983. If no action is taken in 60 legislative days, the EPPs will become binding. Depending on the congressional legislative schedule, this should occur

in March 1984 (7:11).

Three carriers: Piedmont, Republic and US Air had already decided, in the absence of DOL action, to abide by the intent of the law. It has been their policy to offer first-right-of-hire to qualified furloughees (13:-). It is difficult to trace the exact number of pilots hired under this policy. Future Aviation Professionals of America (FAPA), an independent employment service for pilots, estimates the number at "one to two hundred". In their opinion, this number comes close to exhausting the number of pilots interested and qualified under the EPPs (13:1). When DOL begins keeping records in the spring of 1984, a more accurate appraisal will be possible.

Representative Norman Mineta (D-California), Chairman of the House Aviation Subcommittee has introduced legislation aimed at eliminating the four year tenure requirement for EPP eligibility. Hearings are set to begin in March 1984 (7:10). Passage of such a proposal would include another four years worth of furloughees under the EPPs. Should such action come to pass, the requirement for new hires could be reduced. All EPPs under the Airline Deregulation Act expire October 24, 1988 (7:11). At that time, all requirements will be met with new hires.

There is no exact method to forecast the number of furlough recalls in a given year, but we can make a "ball park" estimate using the following logic. The vast majority of furloughed pilots are with five companies (see para 1). Of these five, only American and United have begun or are forecasted to continue recalls (5:1). The number of furloughed pilots with these two companies is presently 1266 (see Table 1). The programmed attrition rate for American and United indicates that it will take three years to delete this pool (4:29). This roughly equates to 400 pilots per year, which means the industry will require approximately 400 fewer new hires during the first three years of the forecast. This method is admittedly crude, but due to the volatility of the industry any attempt at greater accuracy would be fruitless.

One last factor concerning the furlough pool remains to be addressed. How many furloughed pilots would decline a recall? Historical data is sketchy and only one airline responded to inquiries on the subject. They estimated that less than 1% of recalled pilots had historically declined the opportunity (15:-). FAPA feels that while some pilots may bypass their recall once or twice, as allowed for in their contracts, very few would decline their final opportunity (13:1). It seems safe to assume that declined recalls will have no significant effect on the analysis.

In review, the furlough pool is not as large as it appears. An indeterminate number of these pilots have already been hired with other carriers under EPPs contained in the 1978 Air Line Deregulation Act. Evidence indicates that furlough recalls will decrease demand for new hires slightly for the next three years and then cease to be a significant factor.

## Chapter Six

### CONCLUSIONS

The purpose of this study was to determine the airline industry's demand for new hire pilots during the ten year period encompassing 1983 through 1993. The significance of this information to U.S. Air Force personnel planners is illustrated by the correlation between pilot retention and airline pilot hiring. The results of the analysis follow.

The total airline pilot population will be affected by two trends, the increase in passenger traffic and the industry's transition from three to two-man cockpits. The two independent analytical methods used in this study both forecast the total airline pilot population to grow by approximately 3000 pilots. Industry-wide attrition over the forecast period will be approximately 13,000 pilots. This means that over that period approximately 16,000 vacancies must be filled, or an average of 1600 pilots per year. For the first three years of the study, the recall of previously furloughed pilots will reduce the total demand by roughly 400 pilots per year. The most vigorous hiring is likely to occur during the last five years of survey when attrition rates and traffic growth are predicted to be the greatest.

It appears unlikely that any change to age 60 retirement policy is imminent, but even should such a change occur, the effect on industry demand would be negligible. Extension of the EPPs guaranteed in the 1978 Airline Deregulation Act to those pilots hired between 1974 and 1978 would reduce demand by an indeterminate amount through 1988 when the EPPs expire.

The above conclusions pertain only to those carriers classified as majors or nationals. A sustained recession, an interruption to fuel supplies, or a delayed acquisition schedule for new generation two-pilot aircraft could all alter the findings. Based on the best information available, these results should provide an accurate input for HQ AFMPC pilot attrition models.

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